

## LABEL APPLICATOR

## SUMMARY OF THE INVENTION

The present invention is directed towards an apparatus for applying a label to an article, as the article is being transported along a path of travel by a conveyor.

More particularly, the present invention is directed towards an improved label applicator particularly adapted for use in an article weighing and labeling system of the type disclosed in commonly assigned U.S. patent application Ser. No. 536,301, filed Dec. 26, 1974, now U.S. Pat. No. 3,955,665.

More specifically, the label applicator of the present invention includes a vertically movable applicator foot operable to pick up a label from a source and apply such label to the surface of an article and a vertically movable compressor foot operable to engage the applied label such as to cause it to conform to the contour of the article. The applicator foot and compressor foot are independently supported for conjunctive movements with the article in the direction of conveyor travel, while operably engaged with the article, in order to avoid damage to the label and/or the article and/or misalignment of the label relative to the article.

## DRAWINGS

The nature and mode of operation of the present invention will now be more fully described in the following detailed description taken with the accompanying drawings wherein:

FIG. 1 is an elevational view showing a label applicator formed in accordance with the present invention;

FIG. 2 is a sectional view taken generally along the line 2—2 in FIG. 1;

FIG. 3 is a sectional view taken generally along the line 3—3 of FIG. 2;

FIG. 4 is a sectional view taken generally along the line 4—4 in FIG. 1;

FIG. 5 is an enlarged sectional view taken vertically through the label applicator and compressor feet;

FIG. 6 is a sectional view taken generally along the line 6—6 in FIG. 1;

FIG. 7 is a sectional view taken generally along the line 7—7 in FIG. 1;

FIG. 8 is a sectional view taken generally along the line 8—8 in FIG. 6; and

FIG. 9 is a sectional view taken generally along the line 9—9 in FIG. 7.

## DETAILED DESCRIPTION

Reference is now made particularly to FIG. 1, wherein 10 is employed to generally designate a labeling station suitable for use in an article weighing and labeling system of the type disclosed in commonly assigned patent application Ser. No. 536,301, filed Dec. 26, 1974, now U.S. Pat. No. 3,955,665, which would additionally include an article weighing station, not shown, and a continuously driven endless conveyor 12 serving to transport articles 14 successively through the weighing and labeling stations in the direction indicated by arrows 12a in FIGS. 1 and 5. The term "article" is used generically herein to include an individual article as well as a package including one or more articles. Further, while for purposes of simplicity, articles 14 are depicted in the drawings as being of box-like configuration and as having planar upper or label receiving surfaces, it will be understood that the inven-

tion is particularly adapted for use in applying labels to articles having contoured or irregular upper surfaces, such as would be defined by wrapping a clear plastic protective wrapper about a "tray" filled with a "mound" of hamburger or a plurality of chicken parts.

Labeling station 10 generally includes a label supply and printer mechanism 16, which may be essentially conventional in construction, and a label applicator mechanism 18, which is formed in accordance with the present invention. Labels to be applied to articles 14 are individually designated as 20 in FIGS. 1, 2, 4 and 5, and are preferably of the type having a pressure sensitive adhesive coated rear surface permitting them to be individually "peeled" from a carrier tape 22 and then adhered directly to the upper surface of article 14. To this end, mechanism 16 would preferably include suitable means for mounting a supply roll 24 from which carrier tape 22 bearing labels 20 is withdrawn and passed via guide or transport rollers 26 to a label separator or peeling device 28; carrier tape 22 then being passed from device 28 over guide or transport rollers 30 to a driven takeup reel 32. Mechanism 16 would also preferably include a first or constant data printer 34, which is adapted for instance to print the name of the articles being weighed on all of the labels and a second or variable printer 36, which is adapted to print individual article information, such as net weight, price per pound and total weight on the successively presented labels. Of course, transport of articles through the weighing and labeling stations is suitably controlled to insure that the labels are applied to the articles to which their printed information pertains.

A preferred form of label separator device 28 is shown in FIGS. 2-5 as including a label peeler plate 40, which defines a peeling edge 42 having a relatively small radius of curvature; a guide roller 44 for guiding carrier tape 22 for travel over peeling edge 42; and an air tube 46 for creating label supporting air jets 48. Many commercially available labels of the carrier tape mounted variety have been found to readily separate from their carrier tapes when the latter is forced to abruptly change direction, as for instance by being forced to pass about an edge having a small radius of curvature approximating that of a rounded "knife edge," while the label is unconstrained except for its temporary bond with the carrier tape. This is due in part to the fact that the adhesive bond between the labels and carrier type is intentionally a weak bond and due in part to the fact that commercially available labels are normally formed of a material which is less flexible than the material from which the carrier tape is formed. Thus, it will be apparent from viewing FIG. 5 that the leading edge of a printed label tends to separate from the carrier tape immediately upon the turning of the latter downwardly about peeling edge 42 and thereafter tends to proceed in a horizontal direction as succeeding portions of the label are peeled from the carrier tape. However, it is desirable to direct air jets 48 upwardly towards leading edge 42 and in the direction of conveyor travel, as indicated in FIG. 5, in order to insure proper initial separation of the leading edge of the label from the carrier tape and thereafter insure that the label is supported in an essentially horizontally disposed position during the following label separation and pickup operation.

Plate 40 is preferably suspended from a bracket 50 by a pair of hanger members 52 for vertical pivotal adjustments about essentially horizontally disposed